

MONTHLY JOURNAL OF
THE MUSHROOM GROWERS'
ASSOCIATION

MGA

BULLETIN

APRIL 1960

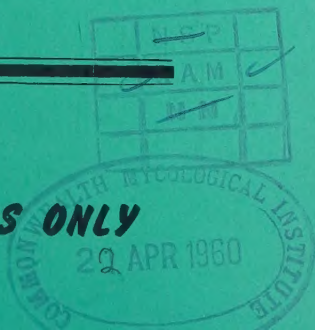
NUMBER 124

CONTENTS

	Page
Editorial : Watch those Prices...	105
STUDIES ON THE INFLUENCE OF CARBON DIOXIDE ON THE CULTIVATED MUSHROOM : Dr. H. J. TSCHIERPE (Part 3)	106
The Late Mr. R. A. Dyke	115
Exchange Wanted...	115
Food Forum : Major A. L. A. Dredge, M.B.E.	117
Retail Publicity	118
Calypso : FP	118
CROPPING WITHOUT A CASING LAYER : P. B. FLEGG	123
Stanley Middlebrook's Pinheads	126
Horticultural Improvement Scheme : Henry Haynes (NFU)	129
Successful Appeal by Yorkshire Manure Dealer	132
1960 Publicity Contributions	134
Last Month's Publicity Contributors	135
Trip to France	135
Small Advertisements	140



AVAILABLE TO MEMBERS ONLY





ONLY

12/6

EACH

CONTROL MUSHROOM FLIES

CHEAPLY

QUICKLY

SIMPLY

One hour's Fumigation weekly
keeps Houses free of Flies



Sole Distributor to Mushroom Industry :

SHIRLEY ORGANICS LTD.

VICARAGE WHARF

BATTERSEA - S. W. 11

PHONE: BATTERSEA 1016

Manufactured by :

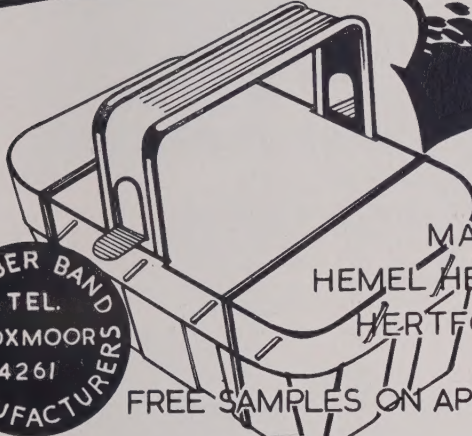
VULCAN FUMIGATOR CO. LTD.

3 NEW LONDON STREET, LONDON, E. C. 3

PHONE: ROYAL 4324

*Leaflets from Manufacturers for details of use
in Homes, Poultry Houses, Greenhouses, etc.*

ARMALINES LTD



MARK ROAD
HEMEL HEMPSTEAD
HERTFORDSHIRE

**RUBBER BAND
TEL.
BOXMOORS
4261
MANUFACTURERS**

FREE SAMPLES ON APPLICATION

Who polished *under the mat?*

And, equally important, who paid damages? The N.F.U. MUTUAL—for the grower concerned had had the foresight to insure himself against claims by visitors and tradesmen, such as this electrician. His N.F.U. MUTUAL Householder's Comprehensive policy covers not only such accidents in the home, but also fire, burglary, damage from burst pipes and a host of other household troubles.

For widest cover at most economical premiums, consult the growers' own society



N.F.U. MUTUAL

NATIONAL FARMERS UNION
MUTUAL INSURANCE SOCIETY LTD.

Head Office: STRATFORD-ON-AVON

*Good
Mushrooms*

*English
Cultivated* **Mushrooms**
consigned to
R.E.JENKINSON
LIMITED

CENTRAL AVENUE
COVENT GARDEN • LONDON • W.C.2

NET

GRADE

DESERVE A FIRST CLASS MARKET

The Activair System

- ★ The Perfect Method of Controlling Air Movement in a Mushroom Shed
- ★ Specialist Equipment Designed to Heat and Ventilate Growing Rooms
- ★ Peak Heat etc., or Ventilate Only in conjunction with Existing Heating Schemes
- ★ Growers with ACTIVAIR EQUIPMENT Claim CROP INCREASES

Write for details to:—

The Technical Sales Department

ACTIVAIR LTD.

The Retreat, The Rutts, Bushey Heath, Herts.

Telephone : Bushey Heath 1506

Here is the *New*

Dring

MUSHROOM BASKET

- ★ First quality White board.
- ★ Strong Metal Handle.
- ★ Double Walls to withstand travel and storage.
- ★ Nested for transport and storage.
- ★ Attractively printed in blue.
- ★ Punched air vents.



HANDLE LETS DOWN
FOR NESTING

BASKETS
66/6 per gross

COVERS
8/- per gross

Growers name and address printed
free for 7 gross lots and above.
Liberal quantity
discounts.

J. DRING LTD

Manufacturers of Flower Cases, and Boxes and Baskets
for packaging produce.

THE AIRPORT • PORTSMOUTH • TEL: 61821-2-3-4



SINDEN PROCESS GRAIN SPAWN

Manufactured by
**E. HAUSER, CHAMPIGNON LABORATORIUM,
GOSSAU — ZÜRICH**

Sole distributor U.K., EIRE :

S. A. F. SAMPSON LTD., Oving, CHICHESTER

Telephone : Chichester 4455/6

Telegrams : SAMPSON, Chichester

SINDEN PROCESS GRAIN SPAWN

Manufacturer: E. Hauser, Champignon Laboratorium, Gossau-Zürich

The **MGA** BULLETIN

APRIL - 1960
NUMBER 124

Executive Committee :

P. B. STANLEY-EVANS (*Chairman*)
GRAHAM GRIFFITHS
(*Vice-Chairman*)
MESSRS. G. V. ALLEN
FRED. C. ATKINS
G. W. BAKER
J. G. BATCHELOR
A. J. BERRY
F. BLEAZARD
R. DUMBRECK

Editorial Board :

FRED. C. ATKINS
DR. R. L. EDWARDS

Hon. Treasurer :
F. L. FILMER

Editor & Secretary :
WINSTON ALDERTON

Telephone : Belgravia 5077

Executive Committee

MESSRS. DR. R. L. EDWARDS
E. A. GOOK
J. A. LINFIELD
R. PINKERTON
A. A. SPENCER
R. THOMPSON

No responsibility can be accepted by the Editor, the Editorial Board, or the Mushroom Growers' Association for statements made or views expressed in this Bulletin, or for any advertisements included in this publication.

EDITORIAL

WATCH THOSE PRICES

There appears to be as much confusion about the aims and objects of MGA publicity as there does about the aims and objects of the so-called Inner Six and their opposites, the Outer Seven, and the imagination need not be stretched very much in order to connect our publicity on one side, and the "sixes" and "sevens" which threaten us from outside—and threaten may well prove to be an apt enough description.

The main purpose of MGA publicity is to maintain the place of the mushroom in the housewife's budget or, better still, secure a somewhat larger share. The tremendous publicity battering for all products, now directed towards the housewife, could easily result in the mushroom being squeezed out, unless something is done about it. Experts say that the dropping of publicity could be disastrous.

It could also be disastrous if the price of mushrooms went too high. On the face of it this is nonsense but, before passing judgment, just pause awhile. It is fact and not fancy that the Dutch, last June and July, took a peek at the English market. During that time they sent in about eleven cwt. of mushrooms, receiving a market return of 3/3d. a lb. It is fact and not fancy too, that the West Germans did likewise last December, consigning just over nine cwt., which returned a little over 4/- per lb.

That the balance between supply and demand is somewhat delicate is not denied, but equally delicate is the matter of prices. If prices are too high then the "sixes" and "sevens" overseas could find the English market profitable. But if the supply in this country is sufficient to keep the market returns at the reasonable level, consistent with the grower's costs, then our possible competitors from overseas would find the English market unprofitable, and would be compelled to look elsewhere, or to keep their own production down to an economic level.

Some plain thinking, and maybe plain talking, is required on this matter. High prices are not the Utopia some people seem to imagine—in the long run they could result in the U.K. producers being on the receiving end of an almighty back-hander. At least, so it seems to me.

WRA

STUDIES ON THE INFLUENCE OF CARBON DIOXIDE ON THE CULTIVATED MUSHROOM

By Dr. H. J. Tschierpe

Institut für Gemüsebau der Technischen Universität Berlin

Direktor Prof Dr. H. Riethus

(The original paper was published in "Die Gartenbauwissenschaft 24, 1, 18-75, 1959)

The relative humidity was between 95 and 98%. After the determination on 17.5.57 the ventilators were opened. On 21.5.57 the CO₂-content had fallen to lower concentrations than on 15.5.57 though the compost temperature was still higher.

Another increase in the CO₂-content always occurred after casing.

As shown in Table 3 an increase of temperature from 75° to 86° F. in the uncased compost nearly doubled the CO₂-concentration. After casing there is often a small increase (2 to 4° F.) in bed temperature. The Table 4 shows that this increase cannot be the reason for the increase in CO₂-concentration after casing. Even in 1 to 3 hours after casing a CO₂-accumulation starts in the compost, though no increase in temperature can be observed. The relatively high concentration persists even when the ventilation—which is usually given after casing—has caused the temperatures to fall. The highest CO₂ concentration was between 1 and 3 volume per cent and occurred 24 to 72 hours after casing.

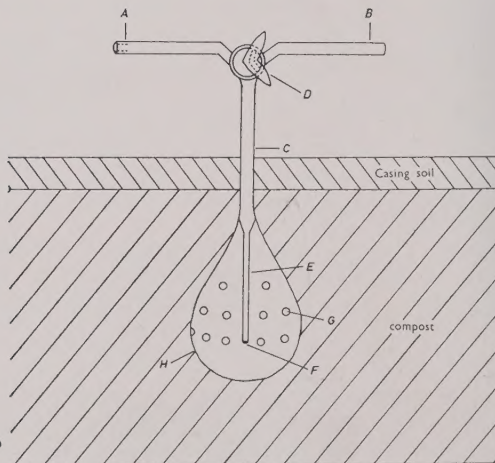


Fig. 1 Glass flask for air sampling. A, B and C arms of the "Czako" cock D E = capillary tube with its opening F in the lower part of the pear-like glass flask. Holes G for entrance of the compost air.

TABLE 4

CO₂-content of compost air before and after casing
(Data from seven different houses)

No.	Before casing		After casing		
	CO ₂ -content in volume per cent	temperature in °F.	hours after casing	CO ₂ -content in volume per cent	temperature in °F.
1	0.54	74.5	1	0.65	73.5
2	0.66	74.5	3	0.94	73.5
3	0.24	68.0	3	0.64	69.4
4	0.27	70.2	3	0.62	69.2
5	0.30	70.7	4	0.81	71.0
6	0.33	70.7	4	0.58	70.7
7	0.28	68.4	6	0.96	69.2
8	0.28	69.0	6	0.64	69.0
9	0.25	70.2	6	0.60	71.8
10	0.28	68.0	8	0.55	67.1
11	0.78	81.3	24	1.24	76.3
12	1.07	82.0	24	1.66	78.5
13	1.03	82.7	24	1.58	77.7
14	0.57	72.7	70	1.11	73.5
15	0.92	77.0	75	2.80	80.5
16	0.65	77.0	75	1.02	80.5
17	0.37	68.0	72	0.82	71.6
18	0.34	68.0	72	0.84	71.6
19	0.53	73.5	72	1.35	74.5
20	0.49	73.5	72	0.81	72.0
21	0.48	73.5	72	1.04	74.5
22	0.66	74.5	96	1.06	77.0
23	0.54	74.5	96	1.20	77.0
24	0.27	70.2	120	0.46	65.5
25	0.48	73.5	120	0.90	72.0
26	0.47	72.5	120	0.82	72.0

The CO₂-increase in the compost after casing is caused by the inhibiting influence of the casing soil on the diffusion. The compost and the mycelium continuously produce considerable amounts of carbon dioxide.

The rate of diffusion of a gas through a porous medium (D), its dependence on the diffusion co-efficient of the gas through air (D₀), and on the pore space of the medium has been investigated by **Buckingham** (1902), **Penman** (1940), and **Flegg** (1952). The relationship

$$\frac{D}{D_0} = 0.66 S$$

has been found to hold for pore space up to 65 per cent. **Flegg** pointed out, that in the previous work too little account has been taken of the degree of aggregation. He worked on the gas permeability of casing soils with different pore space and different particle size. As expected he came to the conclusion that with increased thickness of the casing layer and decreased pore space the CO₂-diffusion from the bed to the room-air decreases.

The mushroom houses are ventilated either immediately after casing, or at the latest after the appearance of the first hyphae on the surface of the casing. Due to the ventilation the CO₂-concentration in the cropping room decreases. A similar decrease in the compost-CO₂ is prevented by the casing soil. Table 5 shows average data of the CO₂-content of the compost-air and the room-air, in three different houses. Four observations during mycelial growth, one after casing, and one at the time of the first pinhead formation. These data were similar in all the houses and are probably the same on all farms, because the methods here applied were similar to those of most mushroom farms: closed rooms during the mycelial growth, start of ventilation either immediately or at the latest 10 days after casing.

If one compares the CO₂-content of the compost—and room-air before and after casing—one can see a nearly constant ratio. The CO₂-content before casing is 4 to 5 times higher than the CO₂-content of the room air. The ratio 5 : 1 is changed after casing. The CO₂-content in the casing increases and at the same time—or at the latest after the beginning of ventilation—the CO₂-content of the cropping-room decreases.

TABLE 5

CO₂-concentrations of compost and room air during the spawn running, after casing and during first pinhead formation

House No.	Days after spawning	Compost-air		Room-air		Remarks
		CO ₂ content in volume per cent	Temperature in degrees F.	CO ₂ content in volume per cent	Temperature in degrees F.	
3	0	1.05	77	0.172	77	Spawn running— 17 days no ventilation cased 17th day ventilated 27th day Pinhead formation 31st day
	3	0.43	75	0.121	66	
	6	0.55	74	0.156	71	
	15	0.38	68	0.146	68	
	22	1.47	74	0.260	73	
	31	0.51	64	0.041	63	
4	0	1.29	81	0.218	77	Spawn running— 17 days no ventilation cased and ventilated 18th day Pinhead formation 31st day
	2	1.01	73	0.205	70	
	4	0.81	70	0.205	70	
	7	0.83	71	0.183	70	
	21	1.76	81	0.102	75	
	31	0.74	70	0.061	68	
6	4	0.78	76	0.159	74	Spawn running— 17 days no ventilation cased and ventilated 18th day Pinhead formation 30th day
	8	0.60	73	0.162	74	
	11	0.48	72.5	0.131	72	
	16	0.63	76	0.142	77	
	18	1.08	79	0.082	77	
	30	0.91	75	0.077	71	

The ratio CO₂-content compost-air: CO₂-content room-air falls from 10 : 1 (during the time of the first flushes) to 5 to 7 : 1 during the second half of the cropping period. These were observed in more than 200 CO₂-determinations. This changing of the ratio depends to a certain extent on the gradual decrease of the CO₂-content in the compost to amounts of about 0.3 volume per cent. and on a temporary increase of the CO₂-concentration in the room. Less than 0.2 volume per cent CO₂ was never measured in the compost. The tendency of the gradual CO₂-decrease in the compost from 0.5 to 1.0 volume per cent during the time of the first sporophore formation down to 0.3 volume per cent during the end of the cropping period was obvious in all cases.

This steady decrease, however, was interrupted by considerable CO₂-fluctuations. Higher CO₂ concentrations always occurred with a temperature increase in the compost (see Figures 2—5). In some cases, in which the casing soil—contrary to the usual practice—was heavily watered, CO₂ also increased in the compost. This CO₂-increase is probably due to a reduced pore space of the casing (Flegg, 1952), and the CO₂-increase after a temperature increase to a forced metabolism of the compost flora. Apart from these special cases the CO₂-content of the compost-air decreases continuously during the sporophore development, but increases immediately after picking. This CO₂-increase was especially clear when all mushrooms had been picked. It did not occur—or only to a small extent—if pinheads or buttons remained on the bed (see Table 7). Associated with the decreasing CO₂-concentrations in the compost during the sporophore development

TABLE 6

CO₂-content of the compost air before and after complete picking of a flush
(Data from 7 different houses)

Before picking		4—28 hours after picking	
CO ₂ -content in volume per cent	compost temperature in degrees F.	CO ₂ -content in volume per cent	compost temperature in degrees F.
0.238	61	0.71	64
0.320	63	2.07	68
0.378	66	1.58	65
0.335	66	1.42	67
0.480	66	2.51	66
0.320	66	3.36	66
0.390	66	1.39	64.5
0.490	66	1.30	66
0.560	68	0.94	69
0.550	68	0.90	69
0.232	69	0.93	67
0.630	71	1.15	70
0.430	73	1.40	72.5
0.660	73	1.10	72.5
0.420	74	0.97	74

show an increase of the CO₂-content in the room-air, though the cropping room was fully ventilated. This increase supported the results of **Schisler** (1957) indicating that the fast growing sporophores respire considerable amounts of carbon dioxide.

Table 6 shows the CO₂-content of the compost-air in 7 different houses before and after a complete picking of a flush. Table 7 shows the situation on one cropping day in one house. The CO₂-increase begins about 2 hours after a complete picking and can continue for more than 24 hours. The height of the CO₂-increase depends on the remaining sporophores, on the amount of strands remaining near the casing surface, on the physical structure of the casing soil, on its degree of moisture and on the air-movement in the house.

The figures 2, 3, 4 and 5 show the average CO₂-concentrations in the compost (average from three plots), beginning with the peak-heating, over the spawn-running time, the time of casing, to the cropping period. The solid line represents the CO₂-concentrations, the dotted line the temperature of the compost.

They show the strong effect of temperature on the CO₂-concentration (A), the CO₂-increase after casing (D), and the increase after a complete picking of a flush, (F) which was independent of the temperature.

TABLE 7

CO₂-content of the compost on one cropping day measured with an interval of 7 hours (10 plots)

No.	Measurement at 12 noon			Measurement at 7 p.m.		
	Deg.F.	Mushroom condition	CO ₂ -con- in volume per cent	Deg.F.	Mushroom condition	CO ₂ -con- in volume per cent
1	59	pinheads	0.34	61	pinheads	0.30
2	62	cups, buttons, pinheads	0.41	62	not picked buttons and	0.39
3	63	90 minutes before picking	0.49	63	pinheads	0.41
4	63.5	90 minutes before picking	0.57	63	pinheads	0.40
5	65	pinheads and cups	0.39	65	pinheads	—
6	66	picked 5 hours before	0.93	66	a few pinheads	0.47
7	66	picked 5 hours before	1.11	66	a few pinheads	0.47
8	64	picked 60 minutes before—still pin- heads near the glass flask	0.46	66	a few pinheads	1.23
9	63	picked 60 minutes before—still some buttons and pinheads	0.51	64	pinheads and buttons	0.37
10	65	picked 120 minutes before—a few pin- heads on the bed	1.28	66	a few pinheads	0.51

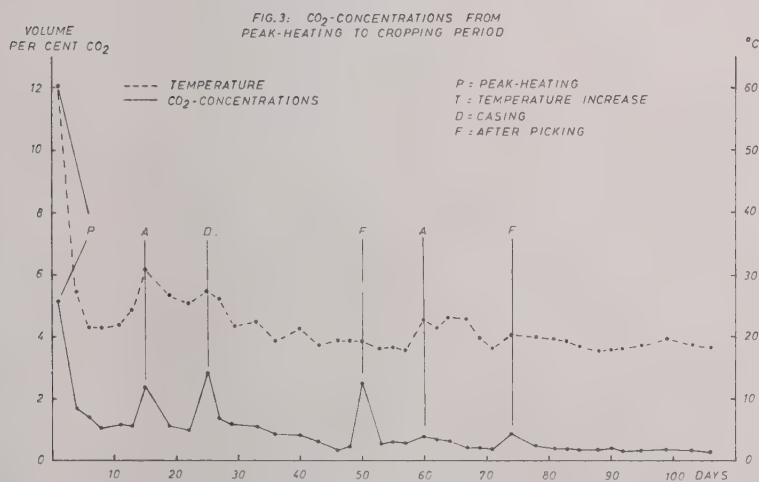
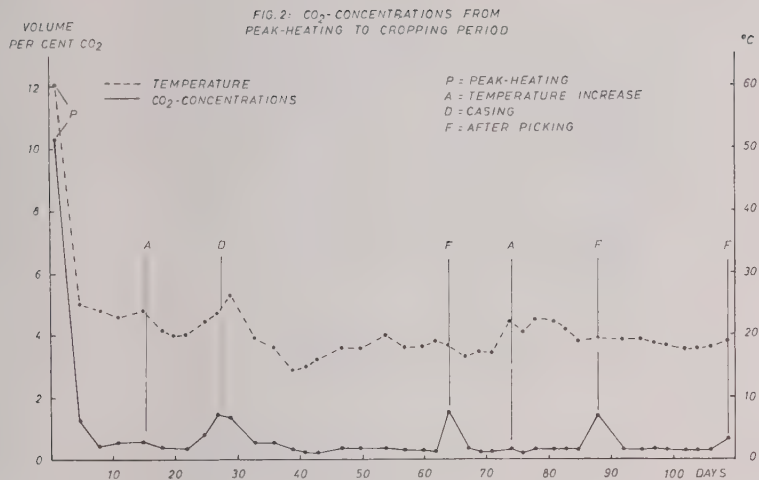


FIG. 4: CO₂-CONCENTRATIONS FROM
PEAK-HEATING TO CROPPING PERIOD

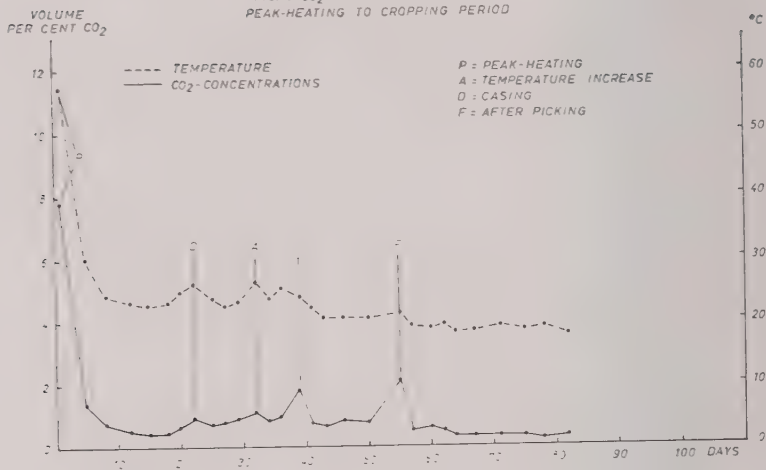
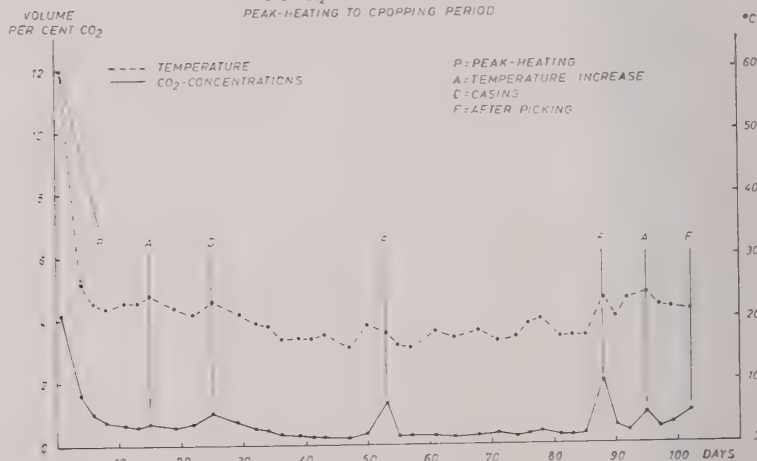


FIG. 5: CO₂-CONCENTRATIONS FROM
PEAK-HEATING TO CROPPING PERIOD



4. Conclusions

Summarizing one can draw the following conclusions from these CO_2 -determinations.

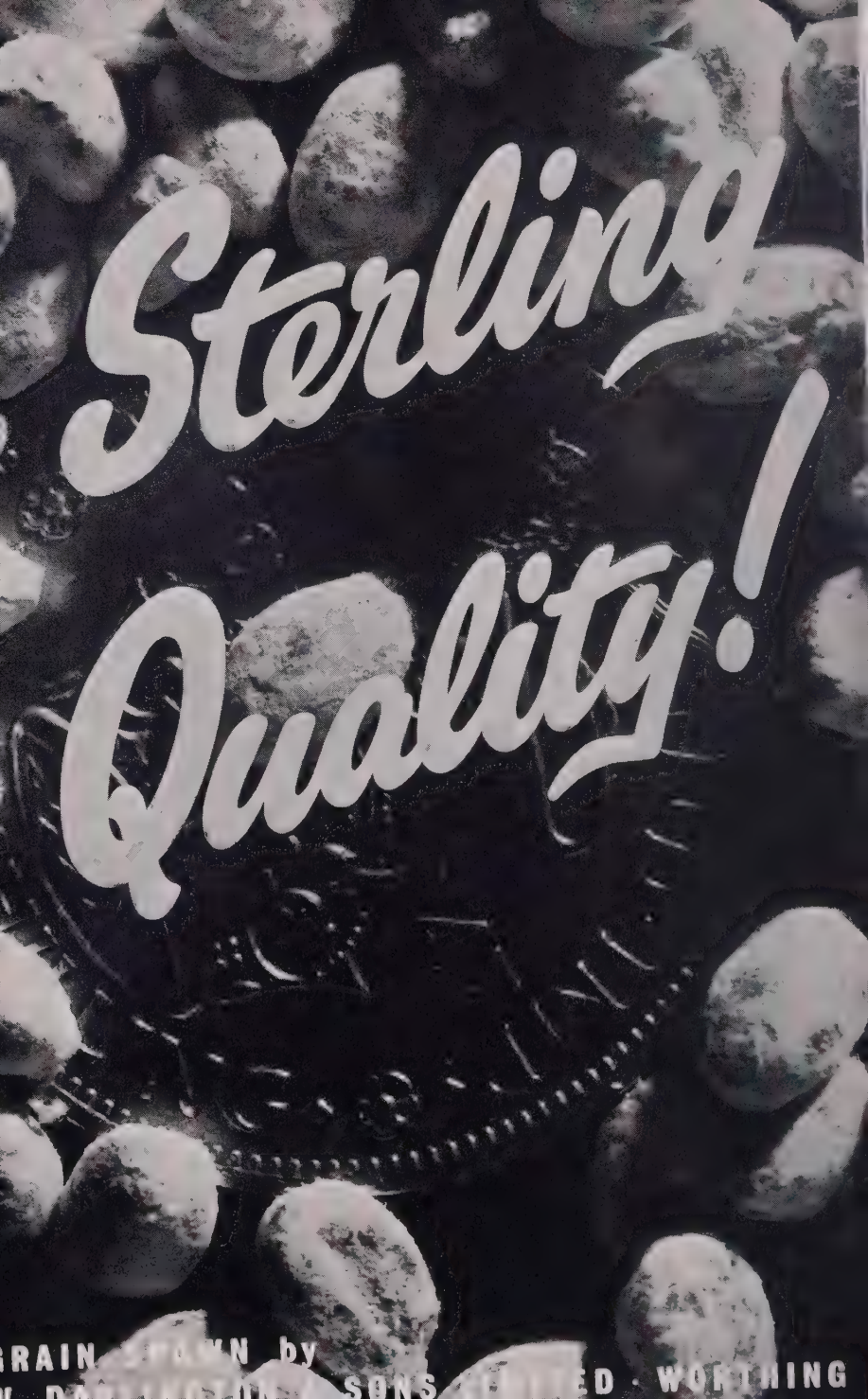
1. If there is insufficient air movement in the peak-heating room the carbon dioxide, developed during peak-heating, rises with the warm air to the upper part of the room. This can cause inhibition of the development of the aerobic microflora in upper beds or trays due to the too high CO_2 -concentrations. The beds or trays near the bottom do not reach peak-heating temperatures (due to the insufficient air-movement) so that here too the compost does not reach the optimum conditions for pasteurisation. Two air-circulations as on this farm are insufficient. 20 to 25 air-circulations per hour, as suggested by **Figgis** (1958), are probably necessary in order to create a uniform temperature and carbon dioxide level. One change of fresh air per hour should be sufficient to maintain the CO_2 -content beneath the concentration that inhibits the growth of the aerobic microflora (**Figgis**, 1958).

2. The increase of CO_2 -concentration after an increase of temperature, observed by **Stoller** (1936) and **Schisler** (1957) in small laboratory experiments, also occurs in the beds of commercial mushroom houses. The CO_2 -increase after heavy watering, observed by **Stoller**, could only be recognized in a few cases, because the beds were watered preferably more often with small amounts of water, as is usually done in practice.

3. The application of the casing soil creates a significant separation between compost and room climate. During spawn-running there are under optimal conditions nearly the same conditions in the compost climate and in the room climate. There is naturally a carbon dioxide partial pressure gradient from the place of CO_2 -development (the mycelium impregnated compost) to the room air. The CO_2 -concentration under the conditions described was 4—5 times higher than in the room-air. The CO_2 -concentration in the compost increased after casing, depending on the gas permeability of the casing soil, i.e., depending on its thickness, its pore space, and its water content. The relationships can be seen in **Flegg's** experiments (1952). The temperature fall following casing is coupled with a decrease in CO_2 -concentration in the compost air; the start of ventilation at the same time increases the CO_2 -partial-pressure gradient between compost—and room-air. During the first few flushes average CO_2 -concentration in the compost-air was 10 to 12 times higher than in the room-air. The CO_2 -partial-pressure-gradient occurs in the casing soil.

4. The increase of the CO_2 -concentration, independently of temperature and water applied after complete picking of a flush, and the CO_2 -increase after casing were not known until to-day. Further CO_2 -determinations, which are not mentioned in detail above, showed that higher CO_2 -concentrations always occur near growing sporophores rather than in any other part of the room-air. These results support the experiments of **Schisler** (1957).

It seems that with the rapid growth of the sporophores a shifting



Sterling Quality!

RAIN STOWN by
W. DARTINGTON & SONS LIMITED · WORTHING

of metabolism to the fruitbodies occurs, whilst the function of the mycelium is only to supply food and water to the developing mushrooms (Lambert, 1958). The low CO_2 -concentrations in the bed, and the relatively high concentrations in the neighbourhood near the sporophores, support this hypothesis. When the mushrooms are picked, the mycelium loses its "exhaust pipe" and is stimulated to an intensive metabolism; this could explain the high CO_2 -concentrations after picking. Furthermore a certain wound-respiration could be responsible for this CO_2 -increase, though this would be more obvious at the surface of the bed and not in the compost. The fact seems important, that after a complete picking, a high CO_2 -partial-pressure-gradient occurs again and that 7 to 10 days later the next "flush" is ready for picking. The function of the casing layer as an initiation factor for fruitbody formation and also the cause of the flushes are not yet known. According to the above mentioned CO_2 -determinations there occurs before every flush an increase of the CO_2 -concentration in the compost. A relation is therefore supposed between the fruitbody formation and the CO_2 -partial-pressure-gradient. The fourth part of this paper will deal with that subject.

[to be contd.]

THE LATE MR. R. A. DYKE

His many friends in the United States and Great Britain learned with sorrow of the death at Indianapolis in February of Ron Dyke. He and I had been friends for close on 15 years, meeting first when he started and was manager of the Marchioness Townshend's mushroom farm at Raynham Hall, Norfolk. In 1953, he went over to the United States to take up a senior appointment with Myron C. Herrick of the Michigan Mushroom Company, Niles, Michigan, as manager of their Indiana plant at West Terre Haute. Whenever he was on leave in England he would call to see me, and I made a point of seeing him in the States in 1958, after his serious illness. He was always alert and progressive, and a most entertaining correspondent. Justifiably proud of the output of Indiana which he raised from the bottom of the list of the six Herrick plants to "second only to Niles", he revelled in growing mushrooms, despite labour problems unknown to us. "It is a 24-hours-a-day job", he once told me, adding with a wry smile: "Keeping a Union happy makes it a 48-hour day!" We shall miss his warm fellowship. FCA



EXCHANGE WANTED

Mr. Parmentier, a French mushroom grower with a farm in Geneva, Switzerland, is anxious that his 19 year old son, Jean-Claude Parmentier, should spend two or three months working on a United Kingdom mushroom farm, either as a volunteer or a partly paid workman. The son is college educated and speaks English fairly well. Mr. Parmentier is most willing to accept the son or daughter of a U.K. grower on a similar basis and for a like period. Anyone interested should write direct to Mr. J. Parmentier, 15 Route du Camp, Plan-les-Ouates, Geneva, Switzerland.

VALUE FOR MONEY

No Activator has yet been produced
with the same dependable quality as

M.R.A. No. 1

The rate of application as a supplement is
4 cwt to a 12 ton stack, and because the
essential raw material is under our full
control you must insist on the

ABUNDANCE BRAND

Regular consignments arranged for synthetic composting

For further details and instructions apply direct to

**THE
BRADFORD FERTILIZER
CO. LTD.**

BRADFORD 8

TELEPHONE BFD 41288

FOOD FORUM

By Major A. L. A. Dredge, M.B.E.

The Surrey Branch of the NFU held a Food Forum at Sutton recently. The MGA decided to stage an exhibit of pre-packed mushrooms and my wife and I were asked to put up the display. The photograph shows the table which was covered with a bright red cloth on which was displayed pre-packed cartons and trays from Combe Bank Market Gardens Ltd., Greenacre Graded Mushrooms, the MGA and Monlough Food Productions Ltd. The MGA emblem was picked out in small white buttons and was most effective.

The other exhibitors included PPDA, the Milk Marketing Board, the Egg Marketing Board and two excellent displays of British cheese and bacon. The exhibition was attended by some 450 people, mostly housewives. Great interest was shown in the mushroom display and I was surprised to find that, even now, a very large proportion of housewives do not realise that cultivated mushrooms do not have to be peeled. I am glad to say that, for the first time since I have been exhibiting, not one single question regarding growing was asked!



At the Food Forum leading television "star" — Eamonn Andrews — was in the Chair: six local farmers formed the panel. Most of the questions asked concerned the short supply of English bacon, cattle diseases, the marketing of vegetables and the high percentage of profits made by retailers.

One of the audience asked the old question: — "Why don't cultivated mushrooms taste as good as the field variety?" One of the panel tried to answer the question, admitting that he knew nothing about mushrooms. I therefore stood up from the back of the Hall, announced that I was a grower and also representing the MGA. I informed the audience that since this question had often been asked, a test had been carried out in the States when several chefs were blindfolded and asked to taste field and fresh cultivated mushrooms. They were unable to tell the difference. I followed this up by pointing out that most field mushrooms were eaten for breakfast immediately after they had been picked, thus accounting for the belief that their taste was stronger than the cultivated variety. The moral was of course to obtain mushrooms, so far as possible, direct from growers.

The Food Forum was a great success and Eamonn Andrews proved an entertaining and efficient Chairman. It is rather shocking to realise that it is necessary to have a paid performer in order to draw a large audience, who are in reality genuinely interested in ways and means of buying more British fresh produce.

RETAIL PUBLICITY

For the last two years, at the request of the Mushroom Growers' Association, our subsidiary company—Marigold Nurseries Ltd., of Great Bowden, has supplied mushroom trays to Lewis's Ltd., of Leicester, for their "Mushroom Week" window display.

Public reaction from all accounts was good—the display did arrest the passer-by.

This gave me the idea of furthering this form of publicity through the numerous mushroom retailers served at our wholesale stand—A. Marks Ltd., Leicester.

The established retailer realised the publicity value of this particular display ; apart from possible increase in sales, the novelty of this display fostered goodwill and attracted discussion on mushroom growing. This was achieved at practically no cost to him ; all the retailer paid for was the price of the Mushroom recipe Bags. Four retailers at Leicester and three in Market Harborough devoted window space for a week and have requested that I arrange for similar facilities next year.

Mushrooms growing in their trays, as a centre piece, together with the present MGA display material, appear to fulfill publicity requirements.

Wholesale salesmen are more than ever conscious to-day of the importance of advertising and publicity and with the present increase in Mushroom Sales throughout the country, I am sure "salesmen", if approached, would be prepared to encourage this idea.

D. J. Longhill, M.C.,
Managing Director, A. Marks Ltd.



CALYPSO ON A CALYPSO

Last month's Calypso, rather long,
Was mainly right yet partly wrong;
Omitting reference to gainly gait
It dropped a hint of balding pate:
Alas, since then, one paper quoth
"This pate gives rise to hairy growth".
The credit goes for this array
To Hair Restorer—MRA
Yet reading its owner's last Digest
One could suspect a grass-seed test.
And knowing growers 'bent' on shelves
Get awful things upon themselves
One might, therefore, if not thought bold,
Suggest the growth's—a hairy mould.

F.P. (BELFAST).

Great News for Mushroom Growers



Microsol + Aerocides

= the answer to Mushroom Pests

Fill your Mushroom Shed with an insecticidal fog by simply plugging in and pressing a button! Aerocide droplets are projected into the atmosphere with great turbulence and penetration, filling *every* part of the shed.

Use Aerocide B.H.C. or Malathion for Mushroom flies.

Write for leaflet No. 501

and do not forget the leading Dust for Disease control — *Dithane Dust*, against Dactylum (Cobweb) and Mycogone (Bubble).

Write for leaflet No. 208

DITHANE DUST PRICES

7 lb bags 4/- — 3/9 per lb.*

56 lb bags 3/6 — 3/- per lb.*

*Depending on quantity.

Say **pbi** *for growing profits*

PAN BRITANNICA INDUSTRIES LIMITED · WALTHAM ABBEY · ESSEX.

Dithane is the registered trade mark of Rohm & Haas, Philadelphia, U.S.A.

No quality is high

— MOUNT T

(GRAIN or

**More and more Growers use
MOUNT Mushroom Spawn every month . . .**

Two recent cases of exceptionally good cropping off

MOUNT WHITE GRAIN

One, a shelf grower who on successive crops picked in excess of 3,000 lbs. off 1,500 feet in the remarkably short picking time of 3 weeks 6 days



The other, a tray grower using a shallow tray with not more than 4" of compost, is cropping 390 lbs. of mushrooms to the ton (8 cubic yards) of manure. Both have one thing in common: excellent crops of excellent quality, and of course

MOUNT SPAWN

SOLE DISTRIBUTORS

J. E. R. SIMONS LTD
NOTE OUR NEW PHONE NUMBERS

ner than the top

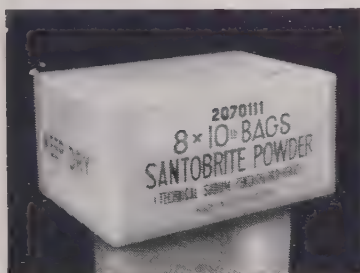
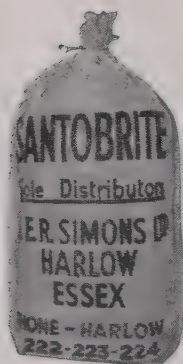
IE SUMMIT!

MANURE)

THE BEST GROWERS

also use **SANTOBRITE**

as a Routine Treatment — in
10 lb. Bags and 80 lb. Cases



Ask for **SANTOBRITE** Leaflet
"THE TRAY CLEANER"

SANTOBRITE ensures a clean start and preserves your trays and woodwork

- HARLOW - ESSEX
. HARLOW 222, 223, 224

MON-LOUGH
REGISTERED
GRAIN SPAWN

FOR
**GOOD-SIZED
MUSHROOMS**
IN
EVERY FLUSH

Write our Technical Director
ROBERT PATTERSON, B.Sc., B.Ag. (Hons.)

Monlough Food Production Co. Ltd.
BALLYGOWAN - BELFAST

'Phone : Carryduff 243 'Grams - "Monlough, Belfast"

CROPPING WITHOUT A CASING LAYER

P. B. Flegg

Glasshouse Crops Research Institute, Littlehampton.

In a previous article (1) it was explained that fruiting does not occur readily on uncased compost because of the high moisture stress resulting from the presence of soluble salts. When the surface of the compost is watered regularly, so that the soluble salts are washed downwards, the moisture stress in the surface layer is lowered sufficiently for fruiting to take place. This suggests that it may eventually be possible to obtain an economic crop without having to use a casing layer.

For the mushroom grower the ability to produce a satisfactory crop without the necessity for a casing layer would have several advantages. The most obvious is the saving in the cost of casing materials and the labour needed to prepare and mix them. No longer would it be necessary to provide hygienic storage room for the peat, chalk, or soil, and machinery used to break up and mix the casing medium could be dispensed with. Apart from the straightforward saving of time and money, there would be several indirect advantages. It would mean that some potential disease—and pest—bearing materials need no longer be brought onto the farm, and the risks of infection from outside would thereby be reduced. Moreover, with no casing layer on the surface of the bed to act as a barrier, penetration of the compost with insecticides and fungicides would be more efficient.

Although much has been written on the value of spent compost as a manure for other crops, it has always been necessary to bear in mind possible harmful effects of the casing materials which may be present, particularly the high proportion of chalk. The value of spent compost, undiluted with casing material, would, undoubtedly, be much enhanced.

Thus, an imposing list of advantages to be gained from dispensing with the casing layer can be drawn up, and a workable procedure for the successful production of satisfactory crops without using a casing layer would be a really worthwhile achievement.

Our first attempt at producing a crop on uncased compost was made in 8-inch plant pots. In all, there were twelve pots of uncased compost, each watered regularly, and every one eventually produced a crop. Six of the pots had no other treatment except regular heavy watering to reduce the salt concentration at the surface of the compost. These came into crop about three weeks later than the pots which were cased normally with peat and chalk, but during the first period of four weeks' cropping from each pot the yields from both cased and uncased pots were the same. After eight weeks cropping from each pot those which were cased had drawn ahead and yielded 1.5 pounds per square foot compared with just under one pound per square foot from the uncased pots.

The other six uncased pots were treated with a suspension of calcium carbonate, applied to the surface of the compost, to see whether a higher pH at the surface was beneficial. These, however, produced only about 0.5 pound per square foot in eight weeks, and the reason for this

is not yet clear. Although this was only a small preliminary trial, it was encouraging that such success was obtained in producing mushrooms on uncased compost, and that on some of the uncased pots the yield was so high.

In another experiment fruiting was obtained on pots cased with milled compost. On those cased with milled compost which had been previously washed in water to remove some of the soluble salts, the yield was higher (1.35 pounds per square foot) than on pots where the milled compost had not been washed (0.9 pounds per square foot). The control pots, cased with peat and chalk, produced 1.65 pounds per square foot. These results were also very encouraging, and supported the idea that the main problem to be overcome was that of removing or rendering ineffective the soluble salts in the surface layer of compost.

Larger trials using trays of six square feet were made and, although yields were relatively low, fruiting was obtained on every uncased tray. Thus, success in producing mushrooms on uncased compost has been achieved in trays, such as are used in commercial practice, as well as in small experimental pots. This led to further cropping trials on an even larger scale. Again, there was success in obtaining fruiting on uncased compost, but yields were still low, the best being about 0.5 pounds per square foot, and the onset of fruiting was delayed.

It is now certain that it is possible to produce a crop, of sorts, from uncased compost by regular and heavy watering. Laboratory studies have been started to investigate the possibility of reducing the effect of the soluble salts in the compost by means other than regular watering. Preliminary results show that this can be done with ion-exchange resins, the type of material used in domestic water softeners. It remains to be seen whether our initial success can be improved on, and a procedure evolved which is a practicable and economic proposition for the mushroom grower.

It would be strange indeed if research intended to provide a better understanding of the function of the casing layer should eventually lead to successful, large scale cropping without a casing layer.

Reference

1. Flegg, P. B. 1959 The casing layer, fruiting and moisture stress. MGA Bulletin, 117, 283-6.

FANS • AIRBLOWERS • EXTRACTORS

Unused Equipment by Best British Mfrs; fully guaranteed, at HIGHLY COMPETITIVE prices. Example, new 15" diam. Propeller ring-mounted Fan for wall mounting or ceiling suspension, moving 2,700 cu. feet per min.; (cfm) to extract or blow, £14.10.0. Can be "Tropicalised" for high temperatures at slight extra cost. Also Centrifugal Fan Blowers motor-

ised with $\frac{1}{2}$ hp 230/1/50 motors, specially treated to withstand Humidity. £25.15.6d. each. Ideal for use with Polythene tubing or similar. Also window-mounting extract Fans from 6gns. Our list of Highly satisfied Users grows almost daily—may we add your name too? Detailed enquiries given prompt personal attention. Literature available from :—

BELLANGER BROS. (LONDON) LTD.

300 HOLLOWAY ROAD, LONDON, N.7 • Phone : NORTH 4117

The **CULVERWELL** *Manure Turner*

MODELS FOR
HAND or TRACTOR
LOADING



ELECTRIC
PETROL
DIESEL

Our present range of three different models incorporates many years experience of manufacturing these specialised machines.

In use throughout the British Isles and many other countries.

Please send for details

E.O. CULVERWELL *Ltd.*

MALLING WORKS, LEWES, SUSSEX

Telephones: LEWES 637 (5 lines)

186. The title "InDIGESTible" has served its purpose in emphasising the loss of the more palatable "Digest" of a more authentic author. I'm told it was unnecessary to spotlight the indigestibility of my writings anyway. "Pinheads" as a title has stuck, and no matter whatever other social, political or agaric title I may on sheer merit acquire, I fear I shall always be known as Mr. Pinhead.

187. When you think faster than you talk you are forced into abbreviations. The use of initials is an example. "Squeet" is another. I keep slipping into this when referring to the number of square feet in a house. It's an evil sounding word. Not so good in the singular either. "Two pounds per squt from a house with a large squtage."

188. As I once reported, one criterion of a good boss is that his staff and workers should never know where he is—he could be in any part of the farm at any moment, and not static in his office chair. I now report another standard. A good master should be able to leave his business at a moment's notice for an hour, a week or a month, without saying anything to anybody and without it making a scrap of difference to the efficiency of the business. This doesn't conflict with the first criterion, of course, since both principles seems to depend on the boss being "lost". Hence the modern clamour: "Get rid of the boss"?

189. The problem of quality of mushroom size and shape seems as far from solution as ever. Some growers complain bitterly if they have poor small stuff for as little as one week in a year. Others, ourselves included, have to be satisfied with only about one week's *good* quality a year. Do growers near the sea or where there's a lot of moisture in the air throughout the year have the best quality?

190. I have many times heard growers grumble at East and North East winds. Spawn grows slowly, pinheads are reluctant to appear, mushrooms dry off and wilt. This leads one to wonder whether in fact the direction of the wind is more important than its force. Because of the moisture held in West and South West winds a gale force of these winds may do less harm than a Force 1 Nor'Easter.

191. What gives taste to a mushroom? Following the example of our cats—who eat raw mushrooms *ad lib*—I have taken to snatching one here and there as I do my daily rounds. The difference in taste from house to house is amazing—or should I say from compost to compost? Some are leathery and rubberized; some are hard and crisp with a taste not unlike a fresh swede turnip. The other day I found one as sweet as if it had been sprinkled with sugar—or grown in honey! Of course it is likely that the older a crop gets the poorer and more leathery the taste will become, so one only compares first flush with first, second with second, and so on. We are only using one spawn, so the answer is not in the strain. *Could* it be compost—the food which goes into the mushroom? Or the rate at which they grow? These seem the only variables.

192. Would you agree that a peat casing should be left loose (untamped) in summer and tamped down fairly hard in winter? You wouldn't? You don't see any point in it? OK, forget it.

193. A northern hotelier, renowned for his good food, came for a few baskets of mushrooms with a view to considering a regular supply. "Of course," he confided, "we only use the tops—caps, you call them. We give our clients only the best. What do you suggest we do with the stalks?" "Soup them;" I said, "Throw them away, give them to the pigs. Send them back if you like". He saw my point. "You mean Returned Empties?"

194. What constitutes a good grower? Is he the man who makes the most profit per £ spent? Or the man with the biggest yield? If the latter, does he have to produce high yields intentionally and deliberately, or will it do if he hasn't a clue to a long period of good cropping? He would be a brave and probably untruthful man who dared to get up and say "I am the best grower in the country". Who among us would presume to go as far as announce that we are even *good* growers? It's a humiliating thought, after years and years of relentless effort.

195. The wiser growers among us will now be preparing for the annual 2-months depression—the "selling below cost" months. These sages would like to close down their farms for these months, have a thorough clean up all round, get rid of the annual disturbance of holidays with pay, and actually cut out losses. I've yet to meet anyone with enough courage and organising ability to put this move into effect. That being impossible, it is still considered wise to try to overcome the over-production bogey by expansion, warmly encouraged by Dr. Edwards' summing up at the A.G.M. when he said that expansion was inevitable and (between the lines) a sign of good health. It is a far far better thing to lose money on a large quantity of mushrooms than on a small. It's better business. Grey matter was obviously omitted from mushroom growers at birth, otherwise we would have learned by now that for our healthy survival we would organise our supply to be just a *fraction below* demand.

196. Whenever I complain about the inefficiency of our heating system to our heating engineer I am made to enjoy the benefits of prolonged lectures on the principles of combustion. These are invariably summarized, quite incomprehensibly to me, by the axiom: "What goes up must come down". When he installed one of our boilers he specified a brick chimney 18' high with a 27" square flue. I expressed the opinion that the flue was too wide for the chimney height. This brought a lecture. The recent visit of N.I.F.E.S. to inspect this particular installation yielded the following statement: "We have not at this stage issued a report because the firing conditions on the boiler were so poor that it was difficult to obtain any reliable figures . . . due to an extreme shortage of draught . . ." They prescribed a new chimney of 45' height. This shook the heating engineer, as he will have to stand the expense. He decided the cheapest way was to erect a steel flue. Since he was now silent about the principles of combustion I took the opportunity to lecture him at length on the principles of common sense as opposed to theory. I flue into a flame and fired my final spark. Pointing to the useless brick chimney I said "What's gone up must come down". Exit engineer.



SPHAGNUM PEAT

available
in the
genuine
18 bushel
bales

(with lump chalk) for casing



GEO. MONRO LTD

WALTHAM CROSS, HERTS.

and at : Aylesford, Cheltenham, Great Totham, Guernsey,
Jersey, Penzance, Spalding, Swanwick and Worthing

THE HORTICULTURE IMPROVEMENT SCHEME MUSHROOM GROWERS INCLUDED

by HENRY HAYNES (National Farmers' Union)

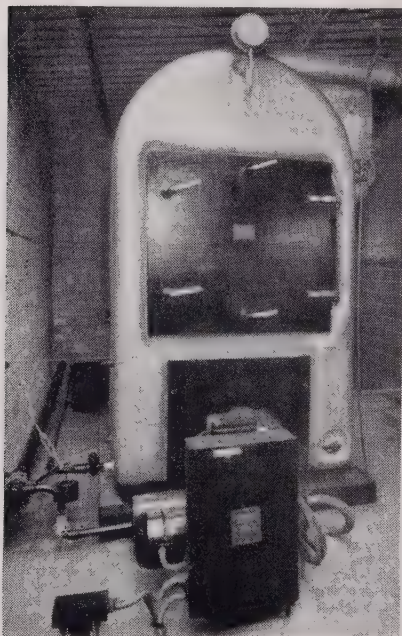
The Mushroom Growers' Association came into existence to fight for recognition for the mushroom industry at a time when the industry was passing through a difficult period. Gradually over the years the Association has fought for tangible recognition of the fact that this highly specialised industry is part of the horticultural industry and as such is also part of agriculture. It will, therefore, be a source of gratification that mushrooms are specifically included in the crops for which grant aid may be obtained under the Horticulture Improvement Scheme. Much has been written about this scheme during the past fifteen months and probably much has been forgotten, so it will not come amiss if we briefly look again at the scheme, particularly as at the time of going to Press the starting date was around 1st April, 1960, by which time the Government planned to accept applications for aid under the scheme.

It was early in 1959 that Mr. John Hare (Minister of Agriculture) stated in the House of Commons that the Government felt that certain sections of the industry were facing special difficulties for which a policy of tariff increases was not the proper answer. He indicated that it was proposed that the industry should be helped to improve its efficiency, particularly on the marketing side, by the introduction of a grant aid scheme. He added that consultations would take place with the industry in regard to the terms of the scheme and in the last year your Association in conjunction with the National Farmers' Union has done everything possible to watch the interests of mushroom growers. One of the first questions which had to be settled concerned the eligibility of those who make applications for grant aid and the over-riding consideration that was agreed was that the scheme should be restricted to horticultural businesses providing full-time employment for at least one man and should not assist those who ran their holdings on a part-time basis. Naturally the Ministry must also be satisfied that the grower is complying with reasonable standards of husbandry.

Whilst many mushroom growing enterprises are highly intensive with very little, if any, outside land used for horticultural production, there are some mushroom growers who are interested in the production of other crops and it is therefore worth mentioning that a horticultural production business must cover at least 4 acres of open land or its equivalent, which for a period of at least two years preceding the application for grant has been used for the production of horticultural crops. Full recognition has been given to the generally highly intensive nature of the mushroom industry and, in arriving at the 4 acres of open land referred to above, one-twentieth of an acre of land occupied by buildings used for the production of mushrooms is the equivalent of 1 acre of open land. The Association realised that even the figure of one-twentieth of an acre was too high and following representations made in conjunction with the N.F.U., growers will be permitted to include their cropped

HORTICULTURAL IMPROVEMENT SCHEME

BURGESS & CO. (ENGINEERS) LTD., place their unrivalled experience in Mushroom House Heating at growers' service in the preparation of acceptable schemes to improve their heating systems, which will qualify for the **Government Grant of 1/3rd of the capital cost.**



This boiler at present carries out **AUTOMATICALLY** the heating of **FIVE GROWING HOUSES, ONE SPAWN ROOM and ONE PEAK HEAT ROOM.** It is rated at **1,000,000 BTU/HR** and is capable of heating **TWICE** its present area. The boiler is fired by a **Brockhouse heavy oil burner** and is fully automatic in operation. Thermostatic control of the heating in the various houses is by one motorised valve and a wandering thermostat which may be plugged into any one house. Peak heating is carried out by using gilled tube in the house and fitting a transportable "SPARGE" pipe at low level for "LIVE" steam injection. The heating lines in the growing houses are $\frac{3}{4}$ " bore each with a steam trap and hand isolating valve.

**THIS INSTALLATION HAS BEEN CARRIED OUT FOR
A. J. MAXWELL, Esq., CHESHUNT, HERTS.**

We are Specialists in Heating Mushroom Farms & Glasshouses

CONSULT US NOW

HIRE PURCHASE CAN BE ARRANGED

BURGESS & CO. (ENGINEERS) LTD.

**BROXBOURNE
HERTS.**

Tel.: Hoddesdon 2305

**BRACKNELL
BERKS.**

Tel.: Bracknell 1341

**LEITH
EDINBURGH**

Tel.: Leith 31056

area in their houses in calculating the total area of production. Spawning houses will also count in calculating the qualifying area.

In discussions with the Government recognition was given to the importance of improving systems for the production and distribution of heat in glasshouses and in buildings used for the production of mushrooms and whilst, as has previously been indicated, the main purpose of the scheme is to bring about improvements in marketing, grants will in fact be made in order to modernise heating installations. They will only be paid, however, in respect of glasshouses or buildings that are in existence when the scheme comes into operation and are in sound structural repair and already incorporate heating systems.

So far as the extent of the aid is concerned, one-third of the cost of a project will be grant aided by the Government. The total cost of the scheme is estimated to be at £7½ million, which will be spread over five years. In addition, it is estimated that grants under the scheme amounting to a further £500,000 will be made for improvements to holdings of a kind hitherto assisted under the Farm Improvement Scheme. It is also noteworthy that the Bill provides for the fixing of standard costs for any operation coming within the scope of the scheme and in this way growers will be enabled to use their own labour on the job and still qualify for a grant.

systems.

Applications for grant aid should be made on form (H.I.S 2) which should be returned to the Divisional Office of the Ministry of Agriculture to be dealt with by the Government's advisory staff, who will be vetting the projects put forward, **and it cannot be over emphasised that payments will only be made in respect of improvements which have received Ministry blessing before the work commenced.**

A schedule of improvements for which grants may be paid was contained in a leaflet issued by the Government at the end of March. It is recognised that in such a highly specialised industry as mushroom production growers may not qualify and, in fact, will not wish to put in applications under many of the headings. A schedule is therefore appended of the projects which, it is felt, will be of interest to mushroom growers. The Association will of course, be pleased to give members every possible help so that they can take the maximum advantage of this scheme in order that they will better be able to face the problems which this modern age presents to the industry.

SCHEDULE OF IMPROVEMENTS FOR WHICH GRANTS MAY BE PAID

Part 1. Improvements to Horticultural Production Businesses.

- (a) Works for the erection, alteration, enlargement or reconditioning of permanent buildings (other than dwelling-houses and, save as in (vi) below, buildings in which produce is grown) to be used for the purposes connected with the growing of horticultural produce or for the storage, preparation for market or transport of horticultural produce, and making or improvement of permanent yards, loading platforms and ramps for such purposes.

- (b) Improvement of systems for the production and distribution of heat in glasshouses and in buildings used for the production of rhubarb or mushrooms.

Part 3. Improvements to Horticultural Production Businesses and Horticultural Producers' Marketing Businesses.

- (c) Provision of means of sewage disposal other than from dwelling houses.
- (d) Making and improvement of roads, fords, bridges, railway crossings and under-passes.
- (e) Provision or laying-on of electric light or power for the purposes of the business.
- (f) Provision of water supply for the purposes of storage, preparation for market or transport of horticultural produce.
- (g) Making and improvement of permanent fences (including hedges), walls and gates.
- (h) Provision of thermal insulation, vapour sealing or gas sealing, for the control of temperature or atmosphere in buildings or parts of buildings used for the storage of horticultural produce.
- (i) Supply and installation in suitable buildings used (or to be used) for the storage, preparation for market or transport of horticultural produce, or specified items of new plant and equipment necessary for such purposes. (The improvements that may be grant-aided under this paragraph will be specified in the statutory scheme; they will include plant for the control of temperature or atmosphere, washing and grading machines, benches, racks, and specified types of conveyors. Machinery for prepacking will not be included).

SUCCESSFUL APPEAL BY YORKSHIRE MANURE DEALER

Mr. Herbert Colin Langstaff, agricultural haulage contractor of Morley (Yorks.), whose conviction and sentence by Morley Magistrates were reported in our issue of February has appealed successfully to West Riding of Yorkshire Quarter Sessions.

He was charged with applying a false trade description to a load of manure delivered to Mr. Barraclough, a mushroom farmer of West Ardsley. The false description alleged was that the load weighed 8 tons 6 cwt. whereas in fact it weighed 4 tons 7 cwt. As he was entitled to do, Langstaff summoned his driver John Colin Lawrence of Richmond Lane, Barwick-in-Elmet, on the ground that Lawrence was solely to blame for the offence.

The Magistrates found both Langstaff and Lawrence guilty and fined Langstaff £50 and ordered him to pay £10 10s. 0d. towards the costs of the prosecution and fined Lawrence £20.

Langstaff appealed against both his conviction and his sentence and Lawrence appealed against his sentence.



Mushrooms Washed the RONJONITE Way
Command The Highest Prices!
Outsell Ordinary Mushrooms!

You never see mushrooms as clean and white as those washed in RONJONITE!

RONJONITE "A" PRE-WASH
RONJONITE "B" DETERGENT WASH

EACH AVAILABLE IN 5, 10, 15 AND 50 LB. LOTS

Lots under 50 lb. — £1 15. 0. per lb.

Special prices on lots of 50 lb. or over.

Details and prices of equipment gladly supplied on request

We invite you to visit us at our location, and will be pleased to answer any inquiries you may make about our Ronjonite products. Write or phone for descriptive folder.

Developed and Produced by the Laboratories of

RON JON, INC. TEMPLE, PENNSYLVANIA

SOLE AGENTS IN U.K. EUROPE, AND MIDDLE EAST

WRINGTON VALE PRE-PACKINGS LTD.
CONGRESBURY - SOMERSET

Telephone YATTON 2121 & 3046

Mr. Raymond Dean, counsel for Langstaff, told Mr. Geoffrey Veale, Q.C., Chairman of the Quarter Sessions Appeals Committee, that he could not appeal against the conviction by the magistrates, because who was guilty was Langstaff's servant and Langstaff was liable for the crimes of his servants in the course of their employment. Mr. Dean argued that the Magistrates ought not to have imposed any penalty at all on Langstaff. He said that the law laid it down that they could not find Lawrence guilty unless Langstaff had proved to their satisfaction (1) that he had used due diligence to enforce compliance with the law and (2) that Lawrence had committed the offence without his consent connivance or wilful default. As the Magistrates had found Lawrence guilty they must have been satisfied about those two matters. Therefore Langstaff was by now exempt from any penalty. Mr. T. W. Mellor, counsel for the Inspector of Weights and Measures agreed that Mr. Dean was right.

Mr. Veale said that Quarter Sessions were bound to remove the penalties imposed on Langstaff and allow his appeal with costs. The technical conviction would remain but nothing else.

Mr. John M. Collins, counsel for Lawrence, explained that his client had disobeyed orders and left himself with insufficient time to weigh the load. He again disobeyed his orders and estimated the weight instead of having the load properly weighed and he used a wrong weigh ticket to substantiate his guess. He had no intention of cheating Mr. Barraclough and indeed has nothing to gain thereby. It was the first time he had ever done anything like this. Mr. Collins asked the Court to show some leniency to Lawrence as he was a man of perfectly good character apart from this lapse.

Mr. Geoffrey Veale said the Bench took a grave view of this kind of offence and in the circumstances the sentence should stand against Lawrence. He made no order for costs against him.

1960 PUBLICITY CONTRIBUTIONS

Salesmen :		£	s.	d.
Francis Nicholls Ltd., Smithfield Market, Birmingham	.. ..	157	10	0
T. J. Poupart Ltd., Covent Garden, London, W.C.2	.. ..	115	10	0
R. E. Jenkinson Ltd., Covent Garden, London, W.C.	.. ..	105	0	0
Dan Wuille & Co. Ltd., Covent Garden, London, W.C.	.. ..	100	0	0
Geo. Jackson & Co. Ltd., Smithfield Market, Birmingham	.. ..	50	0	0
Wm. Morgan & Co. Ltd., Custom House Street, Cardiff	.. ..	5	5	0
Ernest White Ltd., Kirkgate Market, Leeds	.. ..	5	0	0
Reuben Levy Ltd., 88 Spitalfields Market, London, S.E.1	.. ..	3	15	3
Ed. H. Lewis & Son Ltd., Covent Garden, London, W.C.2	.. ..	5	5	0
Ernest Broadbelt Ltd., Smithfield Market, Manchester 4	.. ..	5	5	0

***Spawn Merchants :**

W. Darlington & Sons, Ltd., Southcourt Road, Worthing, Sussex	
Monlough Food Production Co. Ltd., Ballygowan, Belfast	
H. Mount & Sons, Ltd., Littlebourne, Canterbury, Kent	.. ..
S. A. F. Sampson Ltd., Oving, Chichester.	
White Queen Ltd., Yaxley, Peterborough.	

Sundriesmen :

Bradford Fertilizer Co. Ltd., Whitefield Place, Gillington, Bradford	10	10	0
Arthur Coomer Ltd., Farlington, Portsmouth, Hants.	..	..	10 10 0

*Amounts collected by spawn merchants are not for publication.

LAST MONTH'S PUBLICITY CONTRIBUTORS

*Spawn Merchants:

Monlough Food Production Co. Ltd.,
Ballygowan, Belfast.

S. A. F. Sampson Ltd., Oving,
Chichester, Sussex.

White Queen Ltd., Yaxley,
Peterborough, Northants.

*Amounts collected by spawn
merchants are not for publication.



TRIP TO FRANCE

Due to circumstances beyond the control of the MGA, the date of the trip to France, originally given for May, has had to be changed, and the tour will now be held in June, leaving Kent for Rotterdam on Tuesday, 21st June and returning Saturday, 25th June.

Already, from the number of enquiries received, the party looks like numbering about thirty people in all and more detailed information has already been sent to them. Any member who is interested but who has not received full details, should write to the MGA Secretary immediately. Whilst every effort will be made to accommodate late-comers, it may not be possible to do so at the last moment.



MGA ANNUAL GENERAL MEETING ETC.

A full report of the MGA Annual Luncheon and Annual Meeting will appear in the May issue of the The Bulletin when the Accounts will also be published in full.

The BEST of BOTH WORLDS!

The Directors of the National Farmers Union Mutual Insurance Society Limited have pleasure in announcing an increased rate of interim bonus on participating whole life and endowment assurance policies and Farmers' Pension policies issued in the United Kingdom.

A BONUS AT THE RATE OF **44/- PER CENT** PER ANNUM

will be payable in respect of the period since 31st December 1957 on such policies which become claims by death or maturity, or where the pension commences on or after 1st April 1960.

As the Society's premium rates are lower than those of most other U.K. offices, the holder of a "Mutual" with-profits policy enjoys the double advantage of

LOW PREMIUMS & HIGH BONUSES

When considering life assurance you should, in your own interests, always consult the N.F.U. Mutual. Have a word with your N.F.U. Secretary or write to:-



Head Office :
STRATFORD-ON-AVON

PERFECT COMPOSTING

with the



CHATSWORTH COLT

- ★ The machine with the rubbing action beater and the High Throw Roller for easy stacking.
- ★ Available 2' 6" or 4' wide, with electric, petrol or diesel motor.

AS ILLUSTRATED ABOVE THE COLT IS 4 ft. WIDE, POWERED BY ELECTRIC MOTOR AND FITTED WITH MIST SPRAY WATERING DEVICE.

H. D. STEELE & SON, LTD.
RAILWAY APPROACH, WORTHING, SUSSEX

Tel. : WORTHING 2527.

"MR. BESTO"
has proudly
served the vast
majority of growers
for over 50 years



USE BESTO CHIPS
(REGD. TRADE MARK)

Write to

THE BRITISH BASKET & BESTO CO. LTD.

AT ONE OF THE FOLLOWING ADDRESSES

CUXTON, Nr. ROCHESTER, KENT

LEVERINGTON ROAD, WISBECH, CAMBS.

L.M.S GOODS YARD, EVESHAM

INGLEBY WORKS, IRLAM, Nr. MANCHESTER

CROWNPOINT ROAD, GLASGOW, S. E.

'PHONE

Strood 78211

Wis 1728

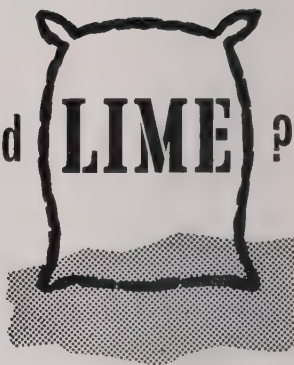
Evesham 6119

Irlam 6

Bridgeton 2742

Does your Compost need **LIME** ?

A B.D.H. Soil Testing Outfit enables you to make reliable pH tests quickly and easily, even though previously inexperienced in the method.



BARIUM SULPHATE SOIL TESTING OUTFIT

PRICE 77/6

Literature is available from:-

THE BRITISH DRUG HOUSES LTD.

B.D.H. LABORATORY CHEMICALS DIVISION POOLE · DORSET

BUBBLE!

(MYCOGONE)

MURPHANE WETTABLE

(zineb)

For spraying use 1 lb. per 100 gallons and apply 1 gallon dilute spray per 100 square feet of bed.

1 lb. 10/6, 7 lb. £3 10. 0., 14 lb. £6 13. 0,
28 lb. £13 6. 0, 56 lb. £25 18. 0.

MURPHANE DUST

(zineb)

For dusting use 8-12 oz. per 1,000 sq. ft. Apply after casing and give 2 further dustings between breaks. Alternatively use 4 oz. per 1,000 sq. ft. for regular weekly applications.
1 lb. 5/6, 7 lb. £1 6. 3, 14 lb. £2 10. 2,
28 lb. £4 15. 8, 56 lb. £9 2. 0.



THE MURPHY CHEMICAL COMPANY LTD.

WHEATHAMPSTEAD

HERTFORDSHIRE

Established 1895

T. J. POUPART LTD.

COVENT GARDEN, LONDON, W.C.2

Telephones : Temple Bar 9001/8 and 7383/7
and at

Spitalfields, E.1.; Brentford & Eastcheap, E.C.3

Associated Companies :

T. J. POUPART (FLOWERS) LTD.

32 TAVISTOCK STREET, COVENT GARDEN, W.C.2
(Phone : Temple Bar 7420, 7589)

T. J. POUPART (SOUTHAMPTON) LTD.

66 HIGH STREET, SOUTHAMPTON
(Phone : Southampton 23363)

T. J. POUPART (BRISTOL) LTD.

10-12 WELSH BACK, BRISTOL
(Phone : Bristol 24255)

T. J. POUPART (WESTERN) LTD.

31 CUSTOM HOUSE STREET, CARDIFF
(Phone : Cardiff 23521)

T. J. POUPART (NORTHERN) LTD.

9-10 QUEEN SQUARE, LIVERPOOL
(Phone : Royal 8601)

T. J. POUPART (HULL) LTD.

62-65 HUMBER STREET, HULL
(Phone : Central 15685)

**MUSHROOMS ARE HANDLED BY EXPERTS
AT ALL OUR ESTABLISHMENTS**

*Our Sales and Distribution Service covers the whole of
Great Britain*

SMALL ADVERTISEMENTS 4d. a word

J. E. R. SIMONS LIMITED specialise in all requirements for commercial mushroom growing. **J. E. R. SIMONS LTD.** advise on culture, packaging and marketing. **WE SUPPLY** Gypsum and Peat, Insecticides, Santobrite for dipping trays and timber, Mushroom Trays, Comporotor Manure Turner, Thermometers, Hose, Hose Fittings and Clips, Chip Baskets and Lining Papers, Rubber Bands, MRA Activators, Paper Bags for used compost, Bag Ties and Tools, special hard service Electric Bulbs, Roofing Felt and Roof Ventilators, Aluminium Paints and Bitumen High Gloss Paint, Aprons and Leggings, Polythene Sheets, Cleaning Brushes and Weighing Machines. Write or phone: **NATTS FARM**, Harlow, Essex, Harlow 222, 223 and 224.

PURE DRIED GROUND POULTRY MANURE. This pure, natural organic is regularly used by prominent mushroom growing firms. It represents an invaluable *organic* activator for stable manure. Finely and evenly ground, it is convenient and clean to handle and being packed in $\frac{1}{2}$ cwt. sacks, the weight you receive is *guaranteed*. Sample and prices (which vary according to the distance for carriage from our Works) on application. Sole Producers:—**THE HAMPSHIRE GUANO CO. LTD.**, **SOBERTON, SOUTHAMPTON.** (Est. 1937.) Manufacturers of "Gunos" (Regd.) Brand Fertilisers.

PORTABLE BOILERS for Peak Heating and/or Soil Sterilizing, with equipment to suit users. **REED BROS. (Engineering) LTD.**, Replant Works, Woolwich Industrial Estate, London, S.E.18.

CHALK AND CARBONATE OF LIME. Best quality Ground Chalk and Derbyshire Limestone supplied in bags; also broken chalk and limestone. **DERBYSHIRE STONE LIMITED**, Matlock. Telephone: 741.

REGULAR SUPPLIES of graded mushrooms required. Please write for Managing director to call. **WRAY & PEASE LTD.**, Castlefolds Market, Sheffield 1.

NOTTINGHAM Company require mushrooms urgently. Write for managing director to visit you. Box No. 5.

MUSHROOM TRAYS. We have regular supplies of Danish and Norwegian fish trays for all your requirements. Please contact **J. G. RODGERS**, 4 Salisbury Row, London, S.E. 17. Telephone: Rodney 3640.

STERILISED SUB-SOIL for Casing Mushroom Beds; delivered in 10-15 ton tip up loads to any part of the Country. Particulars: **F. A. SMITH**, Homeleaze, Staunton Lane, Whitechurch, Bristol. Tel.: Whit. 2465.

If you grow **TOP QUALITY** Mushrooms; if you can maintain consistent supplies throughout the year, and if you want a reliable steady market, please contact **W. J. PEARSON & SONS LTD.**, Brook Street, Nottingham.

NORTHERN WHOLESALERS require daily supplies good quality Mushrooms. Advertiser energetic and substantial Firm. Box No. 57.

STABLE MANURE: fresh, long wheat straw; 3 to 4 tons available weekly; well stacked for easy quick loading; opportunity grower to buy direct from producer. **WYCHWOOD STUD**, Mursley, Bletchley, Bucks.

INSULATION against cold is helped by the use of Clinker ("Breeze") Blocks. Coopers, Builders' Merchants, Ashford and Canterbury.

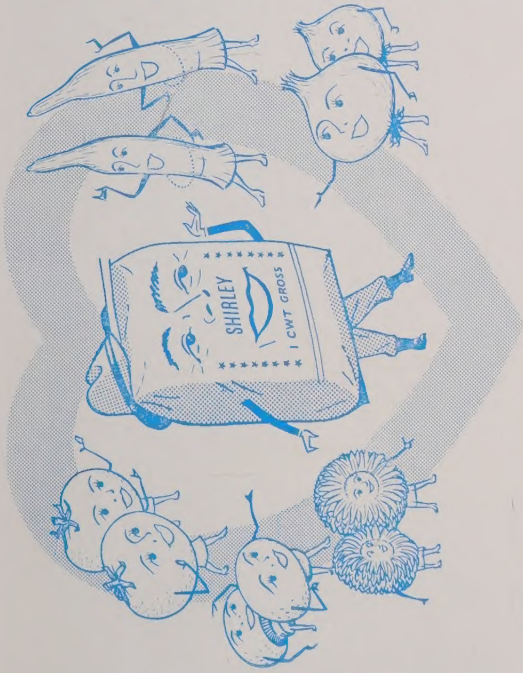
2,000 Purpose-built Mushroom Trays for sale; surplus to owner's immediate requirements. Box 58.

BEST QUALITY stable manure for sale in grades to suit all requirements. Immediate delivery, special quotations for large quantities. **Royal Ascot Nurseries**, Ascot, Berks. Tel.: ASCOT 145.

We all love Shirley

For the finest crops use:

**SHIRLEY ORGANIC
COMPOUNDS
SHIRLEY LIQUID FEEDS
and COVANIC**



High fertility at low cost can be achieved more easily with Shirley fertilisers. The scientific research behind them, plus first class production control, ensures the highest standards of reliability and performance—*always*. Shirley are also, of course, the distributors of JIFFY POTS; VULCAN ELECTRIC FUMIGATORS; VIKING PEAT; Precision instruments for the rapid measurement of relative humidity; percentage of oxygen in peak-heat houses; ammonia, carbon dioxide etc.

**HIGH FERTILITY
AT LOW COST**

SHIRLEY ORGANICS Limited
VICARAGE WHARF · BATTERSEA · LONDON S.W.11

sell with confidence through...

THE HOUSE OF LEATHERLAND



As prominent salesmen in the Newcastle market we are at the centre of the large industrial area of the North-East. We know this market intimately and our long-standing association with leading growers is your guarantee of our good service and whole-hearted attention to your interests.



G.E. Leatherland
LIMITED

FRUIT, FLOWER AND VEGETABLE SALESMEN

20-22 ST. ANDREW'S STREET, NEWCASTLE-ON-TYNE, 1.

Telephone : Newcastle-on-Tyne 28451

Telegrams : "Oranges, Newcastle."